Citron
Creative Industrial
Electronic Systems

Ctw32

Touch-Driver for WinXP,WinVista,Win7

V1.1.xxx

User's Manual

Document revision

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005	Modifications caused by separate x64/x86 versions: - Changed storage directory - Two different setup programs - Hwheel feature disabled	WHOP	2010-05-12

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Tel. ++ 49 821 749450 FAX ++ 49 821 7494599

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2 System Requirements

- PC with Microsoft® Windows® XP/Vista/7 running
- Free COM Port (serial Touchscreen) or USB Port (USB Touchscreen)

USE OF USB TOUCHSCREENS IS RESTRICTED TO I386 MACHINES DUE TO USB DRIVER!

Screenshots taken in manual are from Windows XP and may look differently at your target system but with the same meaning. Logical differences between operating system versions will be mentioned.

3 Supported Touchscreens and Features

3.1 Serial Touchscreens (Citron IRTs)

- IRT65-V1.x, IRT65-V2.x, IRT65-V3.x
- IRT84-V1.x, IRT84-V2.x
- IRT104-V4.1, IRT104-V5.x
- IRT121-V2.x, IRT121-V3.x
- IRT151-V1.x, IRT151-V2.x
- IRT170-V1.x
- IRT181-V1.x
- IRT190-V1.x
- IRT213-V1.x
- IRT240W-V1.x

3.2 USB Touchscreens (Citron IRTs)

- IRT65-V3.3
- IRT84-V2.1
- IRT104-V5.2
- IRT121-V3.1
- IRT151-V2.3
- IRT190-V1.x
- IRT213-V1.x
- IRT240W-V1.x

3.3 Serial Touchscreens (IRTOUCHSYSTEMS Co. Ltd.)™

- E-Series Infrared Touchscreen with RS232/EIA-232E interface
- K-Series Infrared Touchscreen with RS232/EIA-232E interface
- L-Series Infrared Touchscreen with RS232/EIA-232E interface

3.4 Features

- Supports up to **16 Touchscreens** simultaneously with individual settings
- **Dual Touch** support
- **3D** feature (with capable touchscreen hardware)
- Integrated help system
- Mouse driver simulation with enhanced button modes:
  - Left and right mouse button simultaneously
  - Two mouse wheel modes
  - Exit mode and Dual Touch mode for Drag and Drop operations
- Landscape and portrait mounting setups
- Multiple screen setups
- Supports E-, L- and K-Series touchscreens of IRTOUCHSYSTEMS Co. Ltd.

4 Setup

4.1 Hints

ADMINISTRATOR PRIVILEDGES ARE REQUIRED FOR RUNNING SETUP!

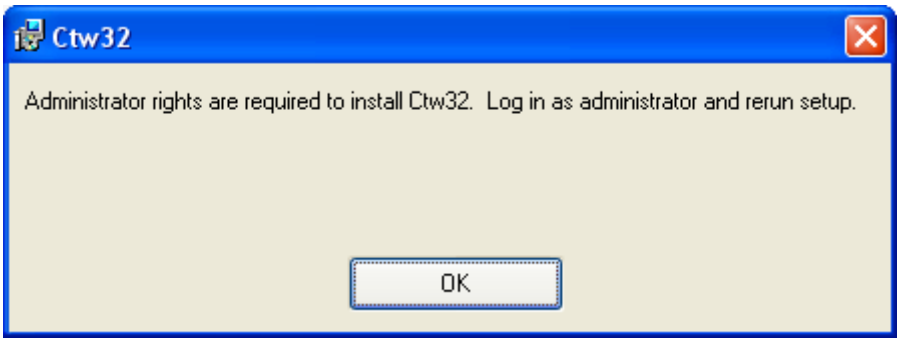

figure 4-1: Administrator rights are required

PLEASE RUN SETUP BEFORE ATTACHING TOUCHSCREEN!

When attaching USB version of Touchscreen first, Windows will probably ask for a device driver. You can detach touchscreen and skip driver installation or select approperiate driver from **FDTI_VCP** directory of **CTW32** installation medium:

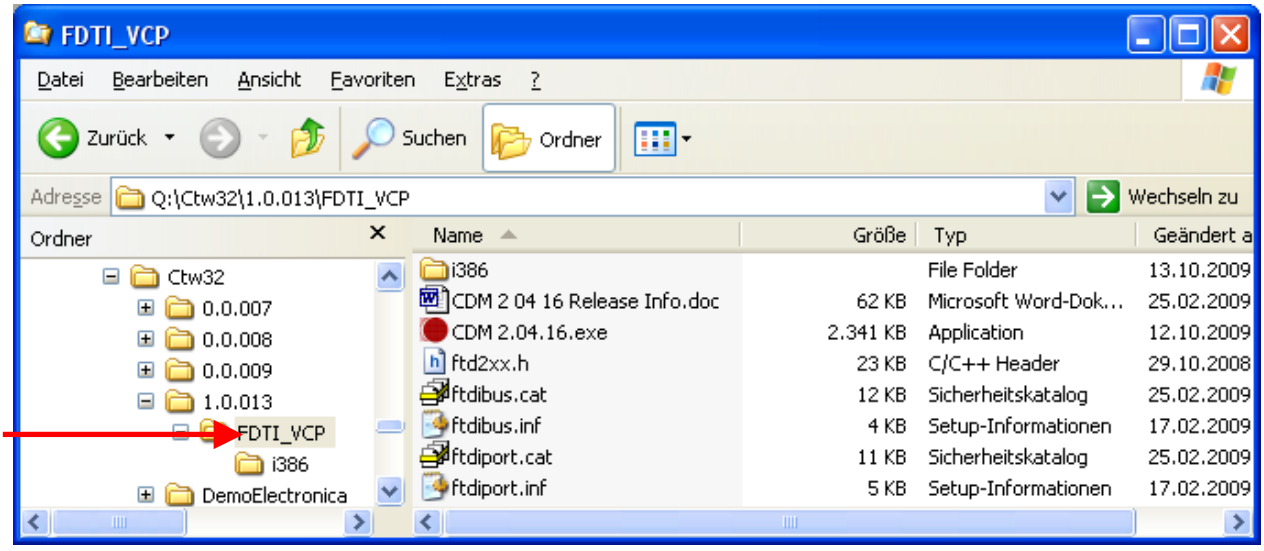

figure 4-2: driver file location for touchscreen preattachment

4.2 Progress

CTW32 comes along with a default setup program. Start **SETUP.EXE** from

x64 folder when using 64-Bit versions of Windows Vista or Windows 7

or

x**86** folder for other supported Windows operating systems

and follow steps on screen:

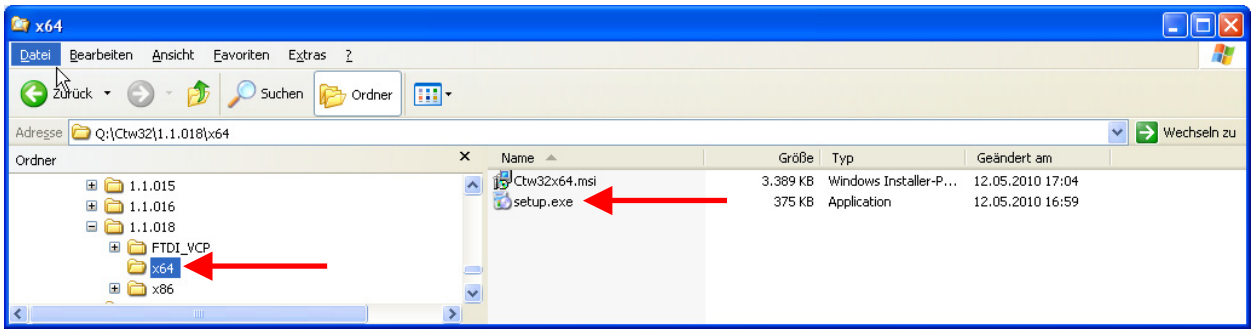

figure 4-3: start setup program

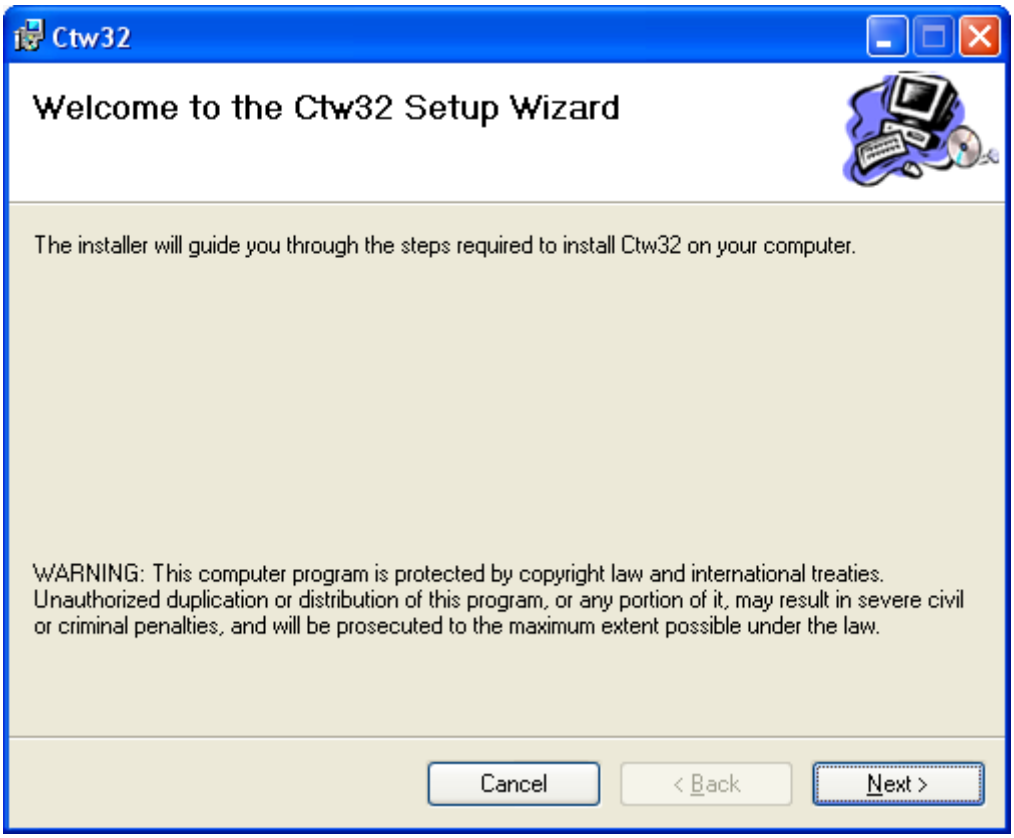
Ctw32
Welcome to the Ctw32 Setup Wizard
The installer will guide you through the steps required to install Ctw32 on your computer.
WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.
Cancel
< Back
Next >

figure 4-4: Setup program

Please wait until USB driver installation is finished. Command line window is closed automatically:

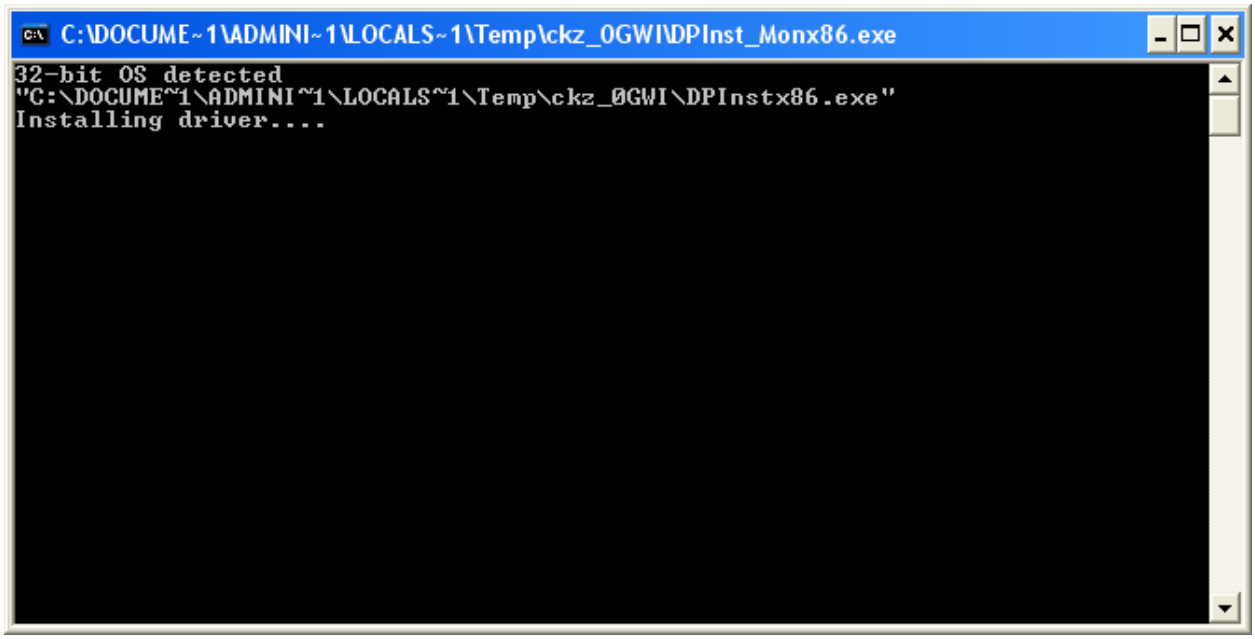

figure 4-5: USB driver installation during Setup

Close setup and **attach touchscreen(s)** now. System has to be restarted before touch screen is operable:

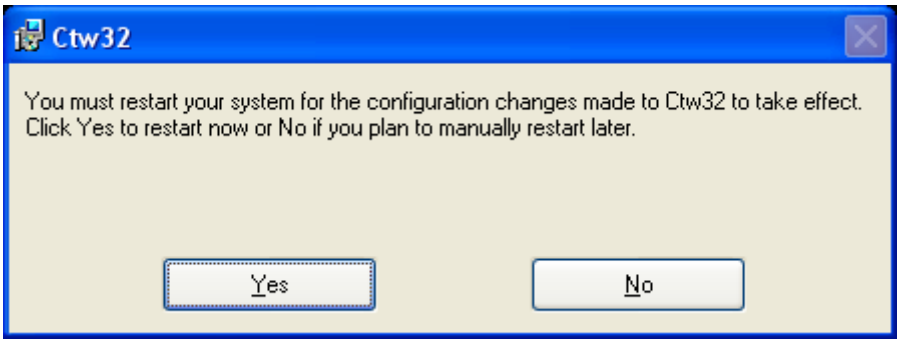
Ctw32
You must restart your system for the configuration changes made to Ctw32 to take effect.
Click Yes to restart now or No if you plan to manually restart later.
Yes
No

figure 4-6: Restart system after driver installation.

5 First start and overview

5.1 Location of Ctw32 control application

All driver related files are stored in "**PROGRAM FILES\CITRON GMBH\CTW32**" directory:

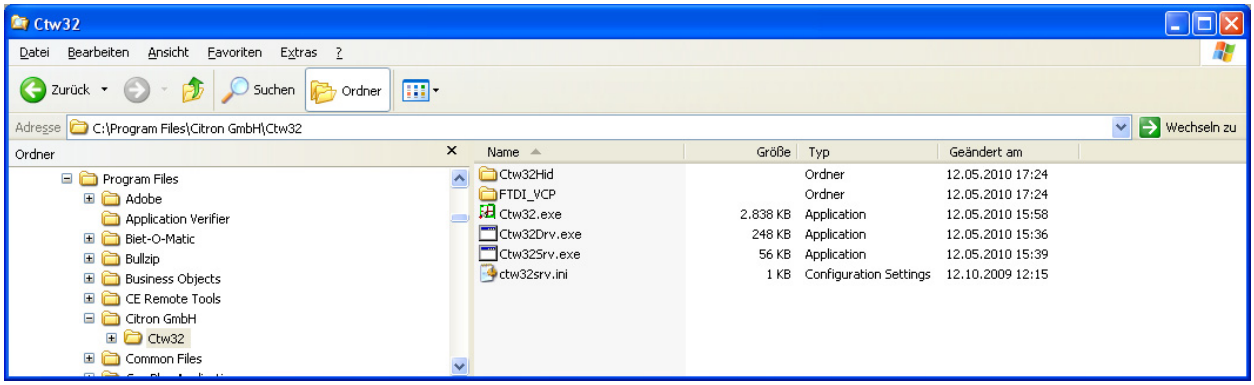

figure 5-1: ctw32 directory

Ctw32 control application **CTW32.EXE** is integrated in startup folder and runs automatically for every logged on user as tray application.

figure 5-2: ctw32 control application as tray application

Use Ctw32 control application for first general system settings following driver installation and touchscreen attachment and afterwards whenever you like to change settings or attach additional touchscreens.

Driver functionality is independent from control application, so you can quit it or even remove it from startup folder. Just open context menu in minimized state and select EXIT:

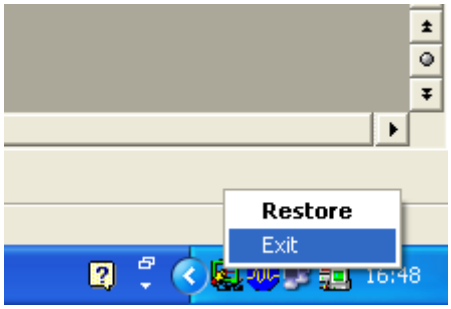

figure 5-3: close Ctw32 control application in tray mode

Restart it when needed from ctw32 directory.

5.2 How to use Ctw32.exe

Left click on tray icon displays Citron Touch Control Center:

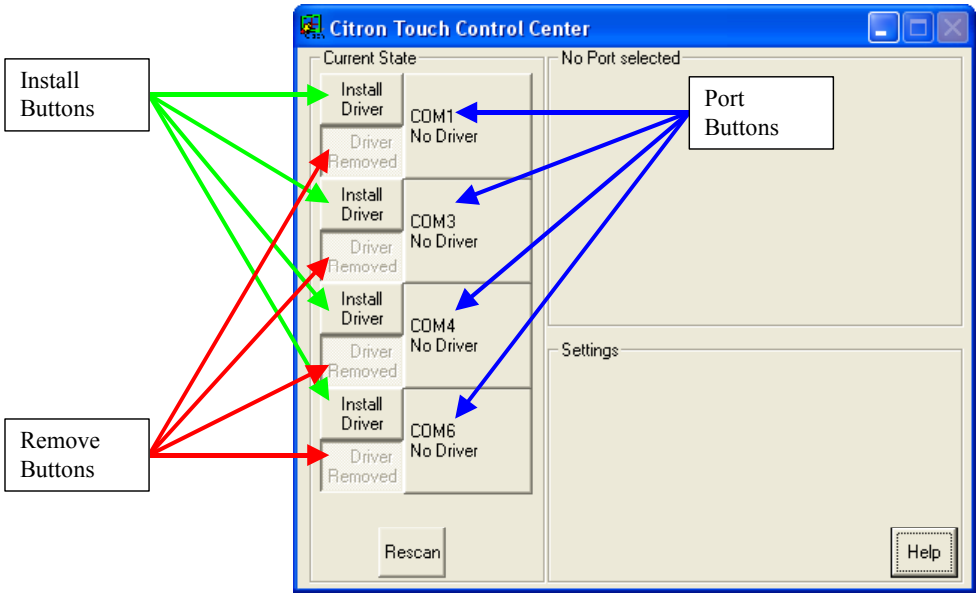

figure 5-4: Citon Touch Control Center after Setup

Citron Touch Control Center (CTCC) has an explorer like operating philosophy modified for better touchscreen use.

Current State window on left side contains all available communication ports for touchscreens (here COM1, COM3, COM4, COM6) presented by port buttons.

Each port can be configured for touchscreen use seperately through corresponding install or remove button. With **Install Driver** button pressed communication port is exclusively opened for Citron touchscreen use if possible. Changed state is shown. “Double installation” is not possible. Install button will be disabled and remove button enabled:

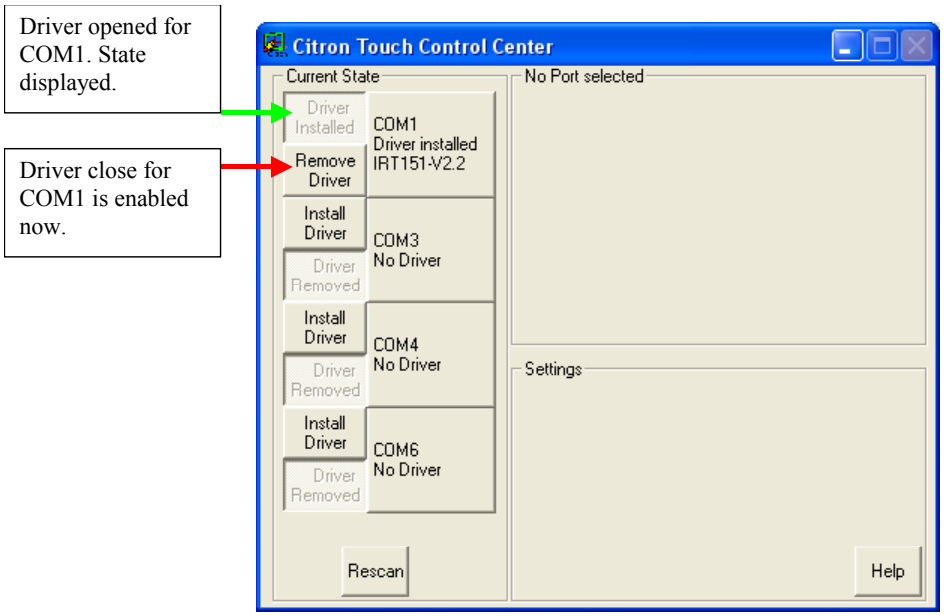

figure 5-5: Driver opened for COM1

Pressing **Remove Driver** button ends Ctw32 support for touchscreens on that port. All resources are released. Other applications can use communication port without interference.

When communication port is opened for driver use, any attached Citron touchscreen is recognized automatically and initialized with given settings. Touchscreens can be **hotplugged** at any time at open ports and will be recognized correctly. Type of detected touch, if any, is displayed in port button:

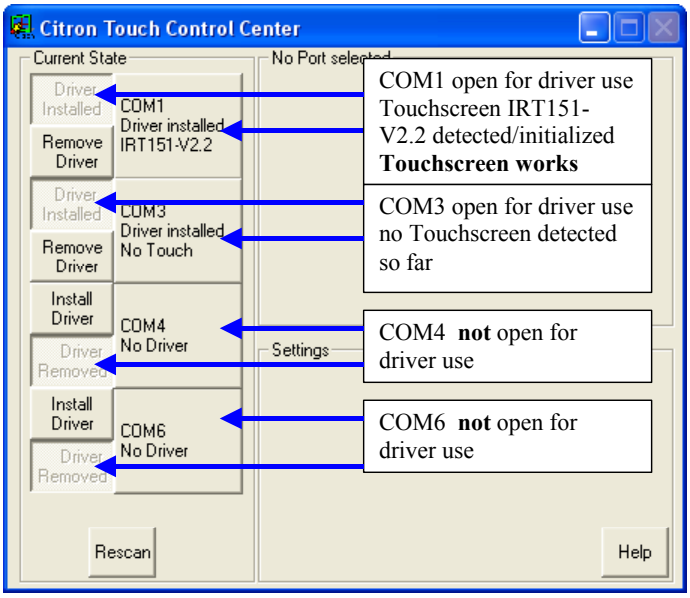

figure 5-6: COM1 open with touch/COM3 open without touch/COM4+6 closed

Select an attached and running touchscreen by pressing corresponding port button. Current settings for selected touchscreen are displayed and can be altered at right side:

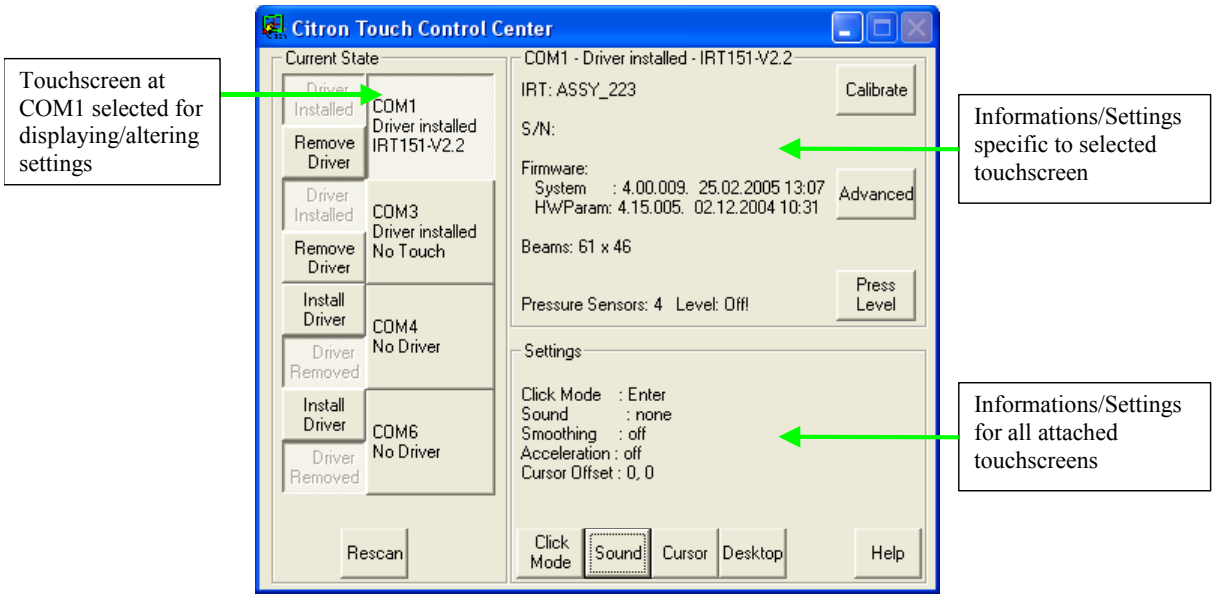

figure 5-7: Specific and common settings for IRT151-V2.2 attached at COM1

For detailed information about available settings see chapter “6 Options and Settings”. When touchscreen is displayed in corresponding port button as available and running but does not follow your finger a calibration is necessary. See next chapter “5.3 Calibration”.

5.3 Calibration

Citron Infrared Touchscreen technology does not need calibration due to changing hardware parameters like resistive or capacitive touchscreens. Nevertheless depending on system requirements touchscreen can be mounted in different ways so coordinate system of touchscreen may not be the same as coordinate system of PC graphics. Whenever moving finger within touchscreen leads to mouse cursor running in opposite direction **one time** calibration is necessary:

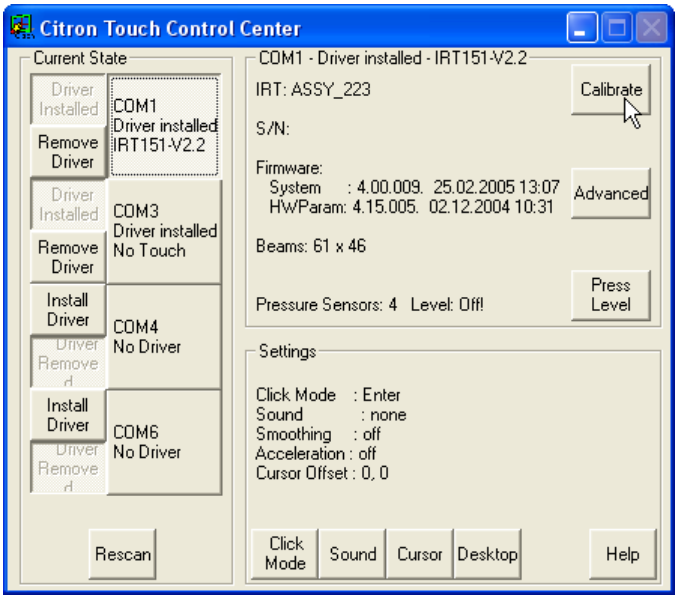

figure 5-8: Start calibration

After clicking "CALIBRATE" **Select IRT Range** is displayed. This is useful when touchscreen does not cover whole size of your graphics system e.g. in multiscreen setups. Default is covering whole screen:

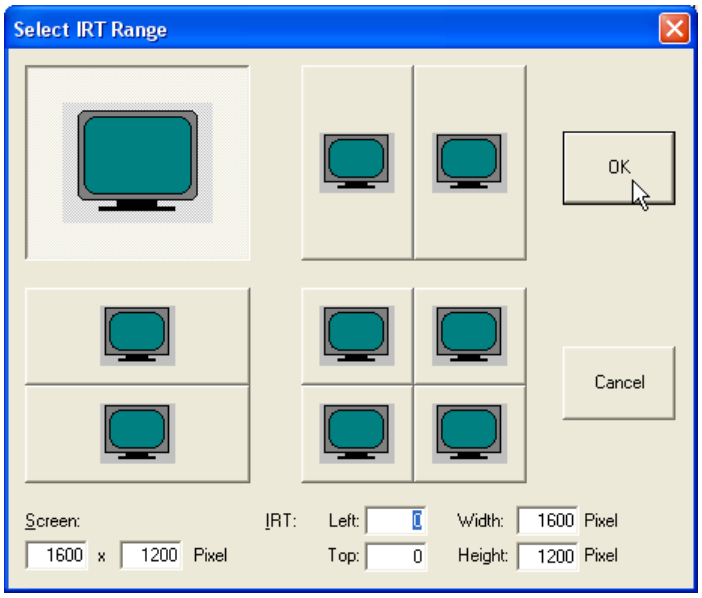

figure 5-9: Select monitor to which touchscreen is attached

After confirming range selection calibration window is displayed. Please touch screen at three given positions in successive order. **CTW32** supports **landscape and portrait** touchscreen mounting setups:

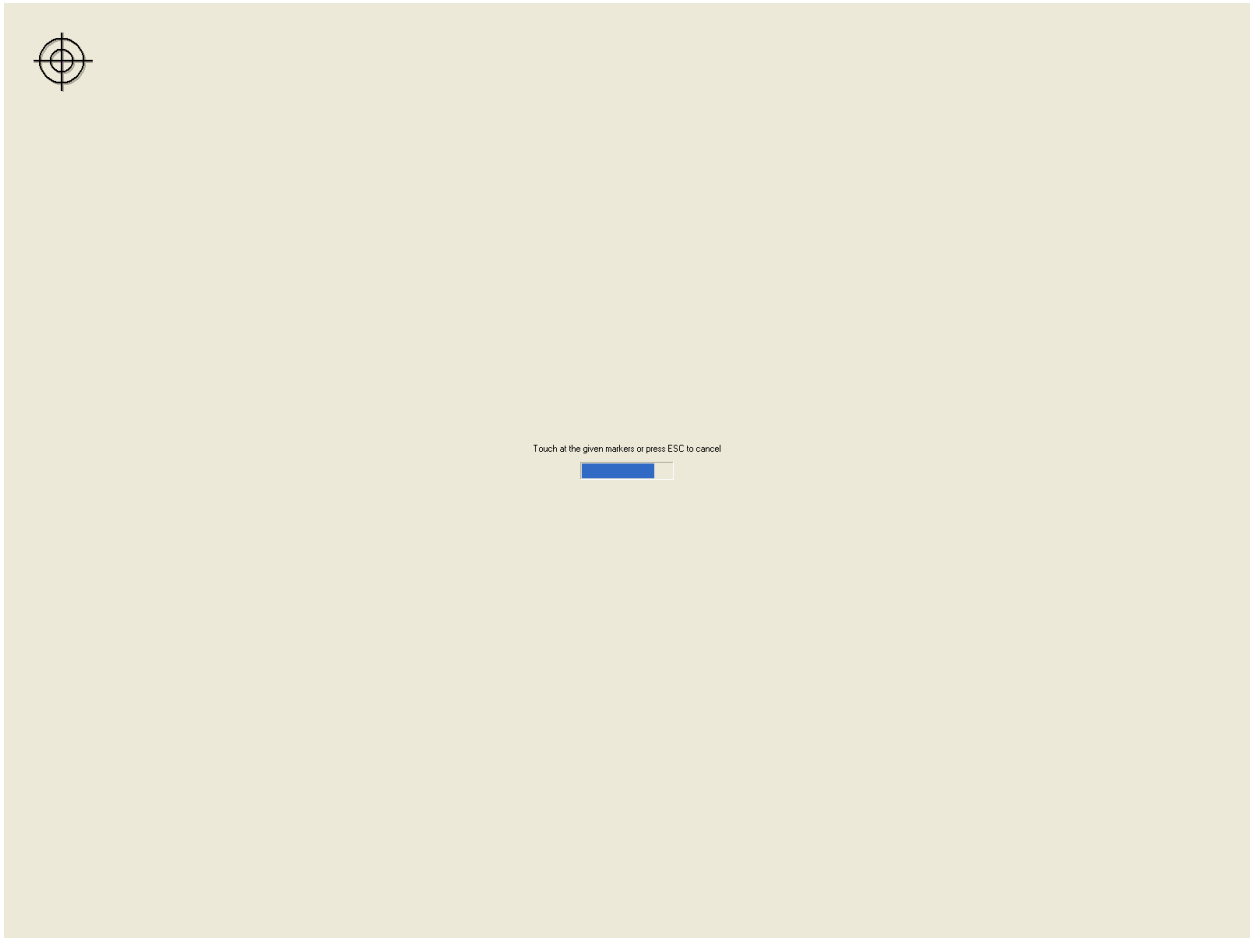

figure 5-10: calibration window with first touchpoint

5.4 Help System

CTW32 has an integrated help system with three components.

1. Pressing **F1** or **Help** button starts an animated demo explaining operating philosophy. Demo can be stopped with any key, mouse or touch input.

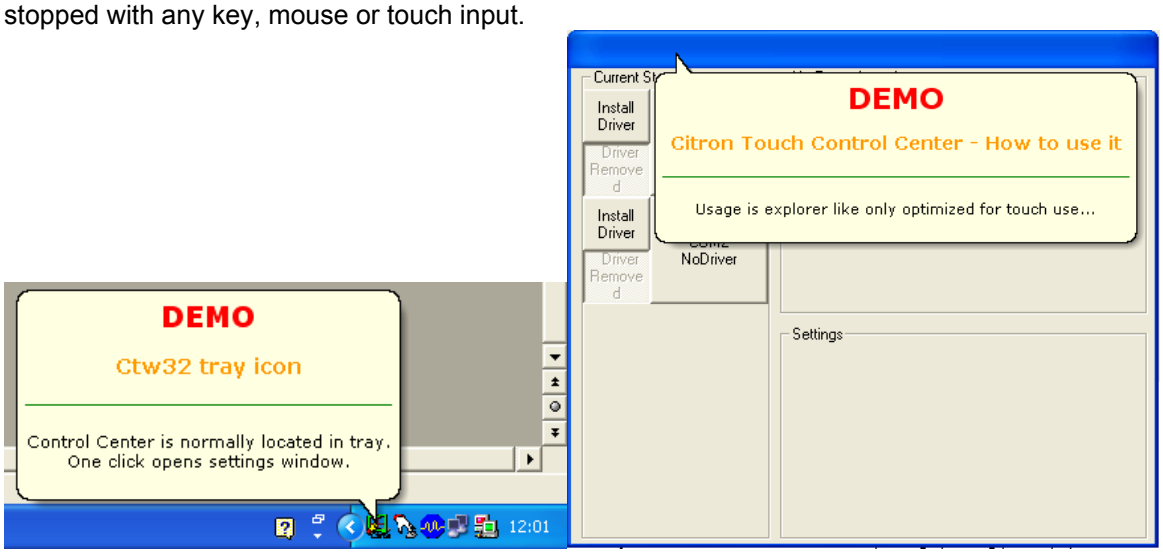

figure 5-11: How to use demo

2. Animated demos are available as tooltips for explaining click modi in Click Mode:

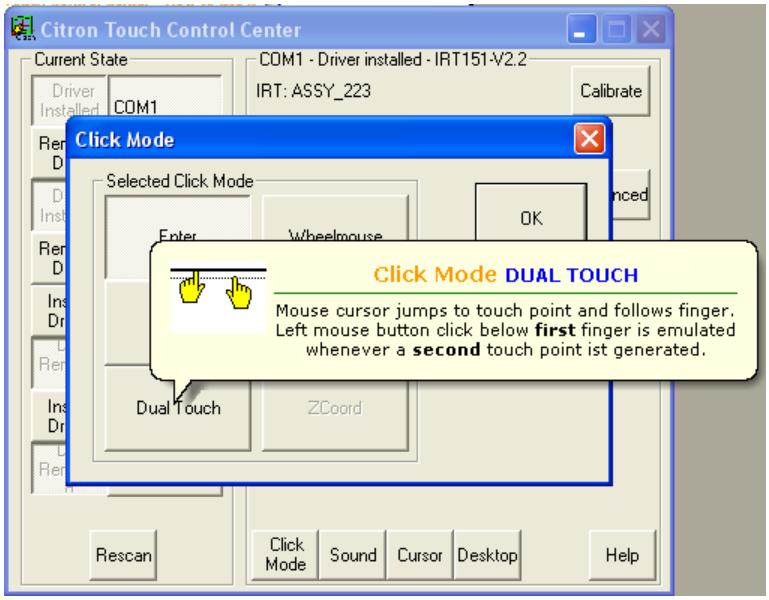

figure 5-12: Animated click mode tooltip

3. Default tooltips with extented informations are displayed when hoovering over operating elements:

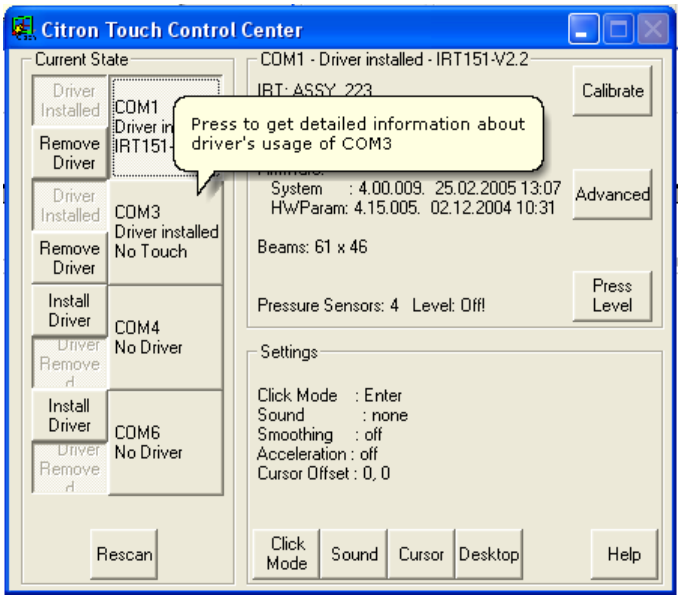

figure 5-13: Tooltip

6 Options and Settings

6.1 General options

6.1.1 Rescan

As it would slow down system performance significantly communication ports attached after system start (e.g. USB touchscreen) will not be detected automatically. Press **Rescan** button for update of available ports after hotplug of USB touchscreen:

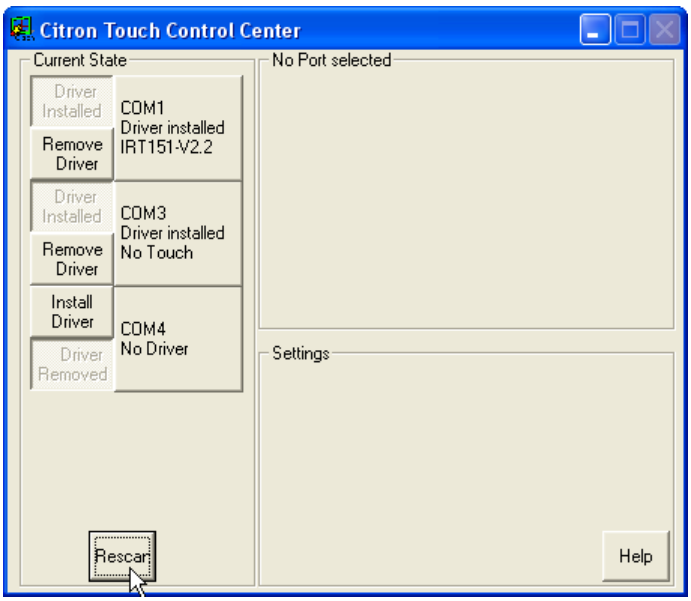

figure 6-1: Initiate communication port rescan

Detection can take up to 60 seconds :

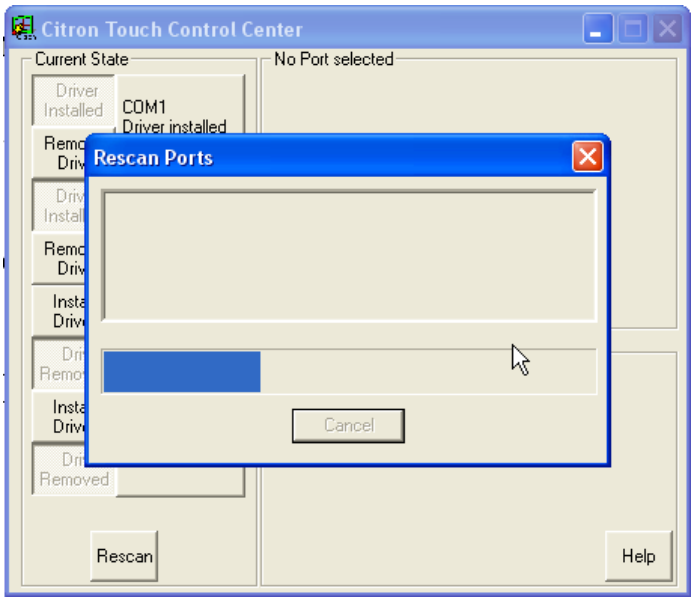

figure 6-2: Updating setup of available communication port

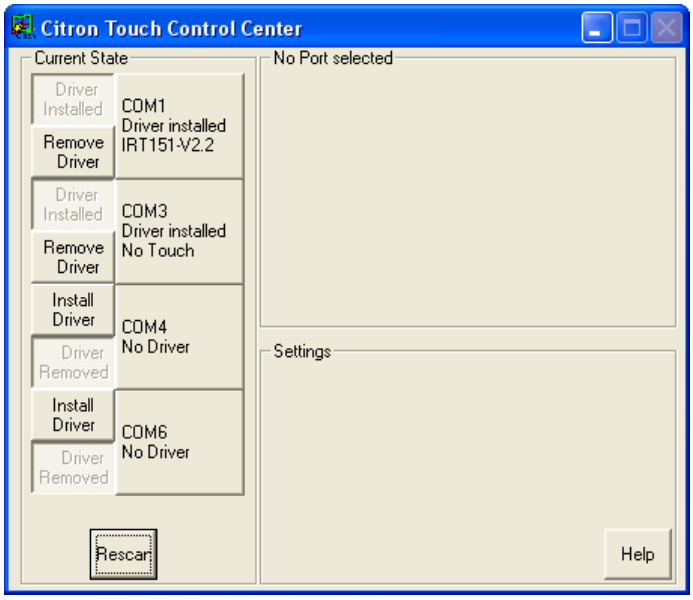

figure 6-3: New communication port COM6 from attached USB touchscreen added

6.1.2 Help

Help button starts animated demo “How to use”. See 5.4 Help System.

6.2 General touchscreen options and settings

Settings and options used for all attached touchscreens are displayed in lower right side of main dialog:

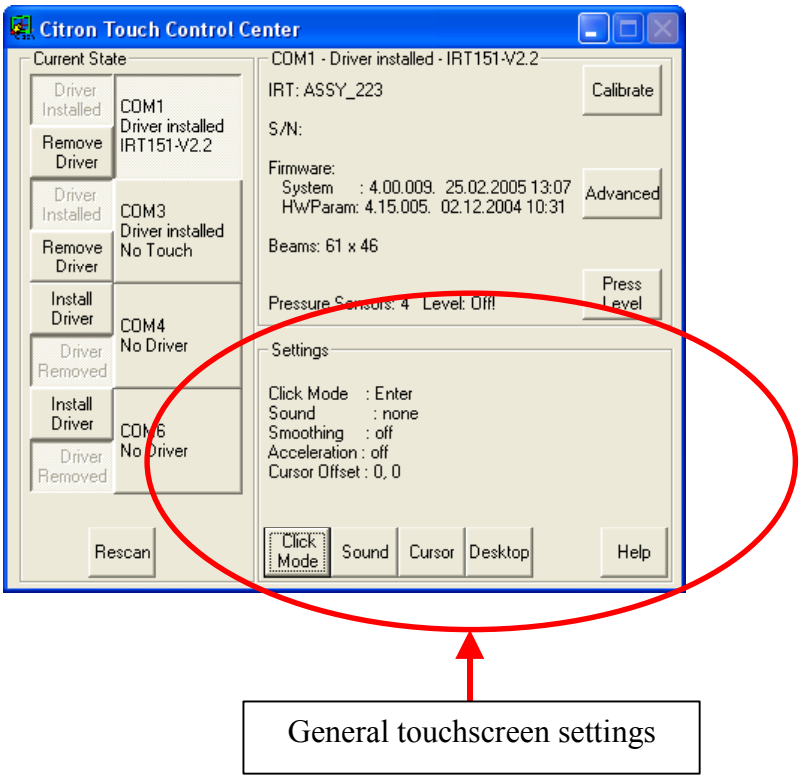

figure 6-4: General touchscreen settings used for all attached touchscreens

6.2.1 Click Mode

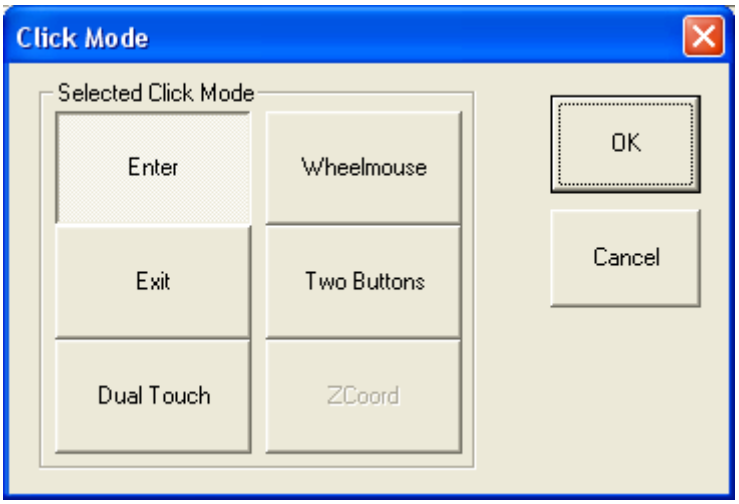

figure 6-5: click mode dialog with ENTER mode selected

Defines how mouse clicks are simulated. As standard Citron Infrared touchscreens firmware supports basic tracking of **two touchpoints.** Emulation of both left and right mouse button click simultaneously is possible, depending on selected click mode. Selected Mode is shown by toggle state of button field.

How click modes work are explained in detail with animated tooltips when hoovering over corresponding toogle button. See 5.4 Help System.

Click Mode	Left mouse button	Right mouse button	Mouse Wheel	Press Level	Drag and Drop	Move cursor without click
Enter	Yes	No	No	Yes	Yes	Yes[1]
Exit	Yes	No	No	No	No	Yes
Dual Touch	Yes	No	No	No	No	Yes
Wheelmouse	Yes	Yes	Yes	No	No	No
Two Buttons	Yes	Yes	No	No	No	Yes
Zcoord	Yes	No	Yes	Yes	Yes	Yes[1]

table 6-1: Comparision of click modes
[1]with Press Level > 0

6.2.2 Sound

When using a mouse there is a tactical feedback and the typical click noise every time a mouse button is pressed. When using a keyboard there is a keystroke. Smooth touchscreen surface does not give such a feedback but it is important for user assurance and even essential for some click modes.

CTW32 allows to simulate click noise for click events:

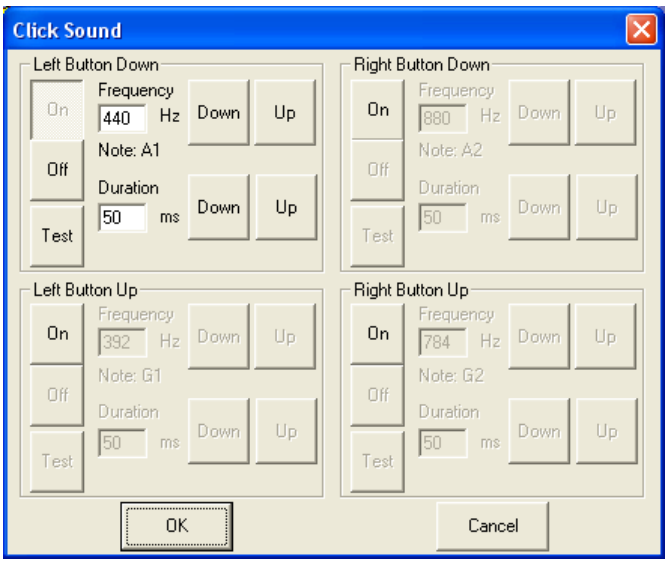

figure 6-6: Dialog for accoustic click feed back

TO AVAOID CONFUSION "NORMAL" CLICK SOUNDS ARE DISABLED WHEN DIALOG IS RUNNIG. YOU HERE THE JUST DONE SETTINGS.

6.2.3 Cursor

Finger as touchpen has the advantage to be onboard always, but the drawback to be much larger than Windows cursor . To overcome or at least reduce the latter **Ctw32** allows some cursor position manipulation settings.

CLICK POSITION IS ALWAYS HOT SPOT OF WINDOWS CURSOR, NOT NECESSARILY FINGER TOUCH POINT.

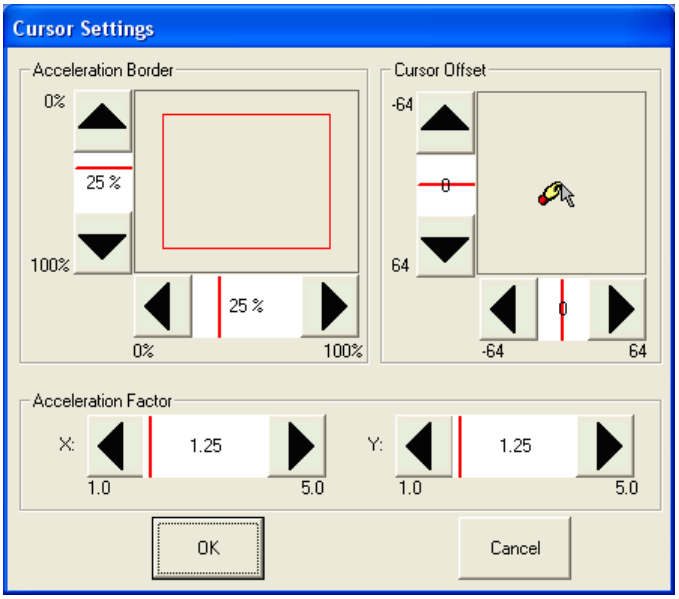

figure 6-7: Dialog allowing manipulation of cursor position

Acceleration Border, Acceleration Factor allows Windows cursor to advance touch point towards screen borders. Useful feature as often used Windows elements (Start button, close button of maximized windows) resides in screen corners. Dependig on finger diameter those elements cannot be reached comfortably otherwise. Settings can be done seperately for each screen axis.

Acceleration Border = 100% -> Acceleration starts right from axis middle
Acceleartion Border = 50% -> Acceleration start half way from axis middle

Acceleration Factor = 2 -> Speed doubles from acceleration border, that means hot spot of windows cursor reaches screen border whereas touch point is half way between accleration border and screen border.

Feature is switched off by default because optimal settings depends on (touch) screen size, resolution, used application etc.

Cursor Offset allows moving Windows cursor away from touch point, so it is visible. Useful with tiny GUI elements and click modes that do not generate a click event as soon as touch area is interrupted (e. g. 3D modes, Exit mode, Dual Touch).

6.2.4 Desktop

CTW32 uses it's own set of **Doubleclick Area** and **Doubleclick Time** as modifying global windows settings would affect attached mice or touchpads, too.

How to use:

1st way: Type in value(s) in edit field(s) and press corresponding **Sync** button. Corresponding touch slider will jump to appropriate position automatically.

2nd way: Use touch slider when no keyboard is available. Value in edit field(s) will be updated immediately:

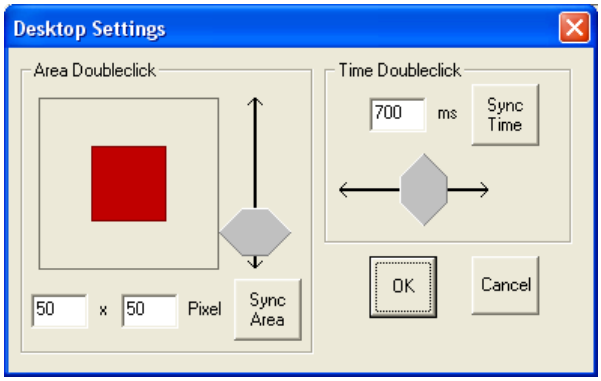

figure 6-8: Desktop settings with touch sliders

CHANGING DOUBLECLICK AREA WITH TOUCH SLIDER WILL RESULT IN SAME X AND Y AXIS SIZE.

Default Doubleclick Area: 30 x 30 pixels
Default Doubleclick Time: 700 ms

6.3 Individual touchscreen options and settings

Settings and options specific to selected touchscreen (by port button) are displayed in upper right side of main dialog:

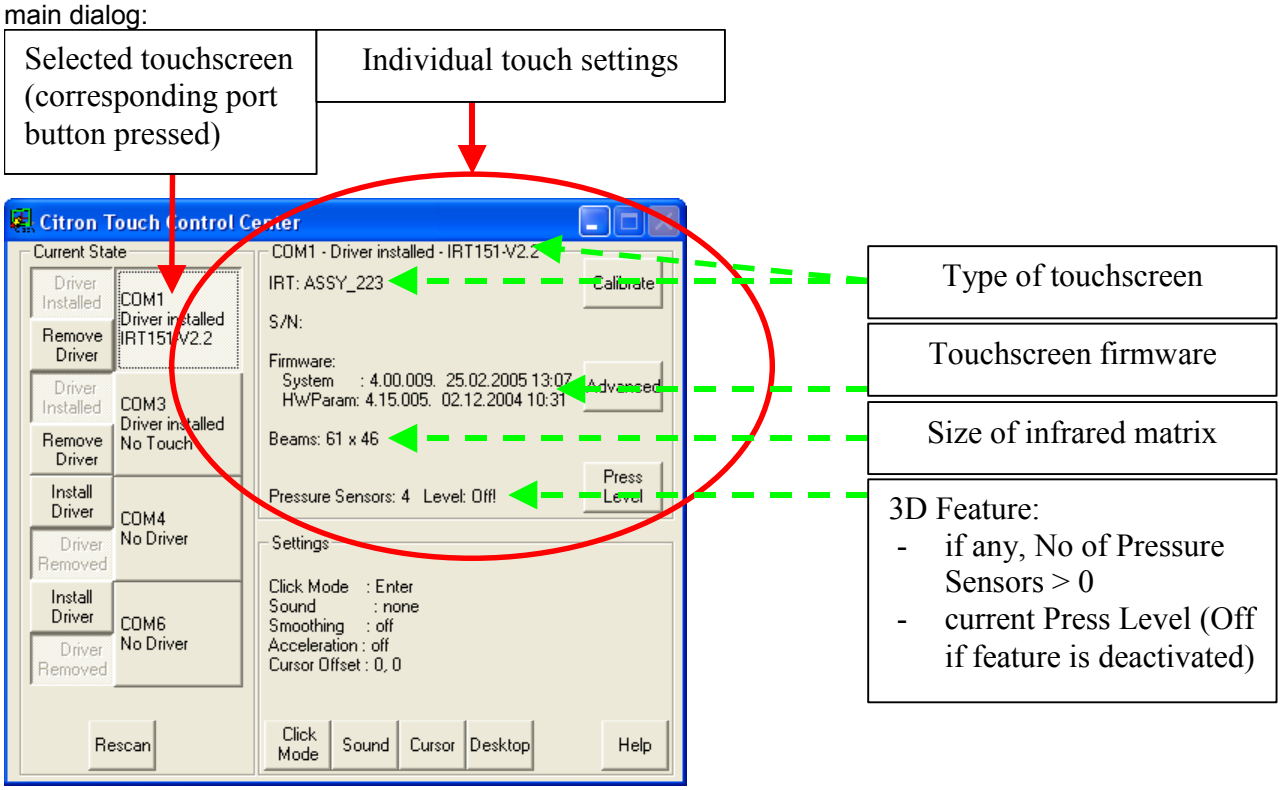

figure 6-9: Individual touchscreen settings

E-, K and L-Series products of IRTOUCHSYSTEMS Co. Ltd. do not support all features of Citron GmbH touchscreens. Unavailable options are removed:

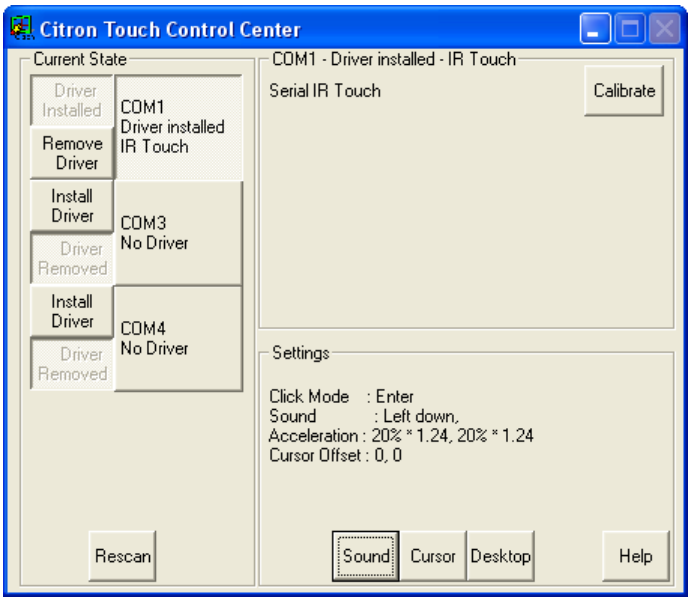

figure 6-10: Individual touchscreen settings for IRTOUCHSYSTEMS products

6.3.1 Calibration

See chapter “5.3 Calibration”.

6.3.2 Advanced

Pressing **Advanced** button opens corresponding Advanced dialog which covers BeamTimeout and HWHEEL Zcoord Features:

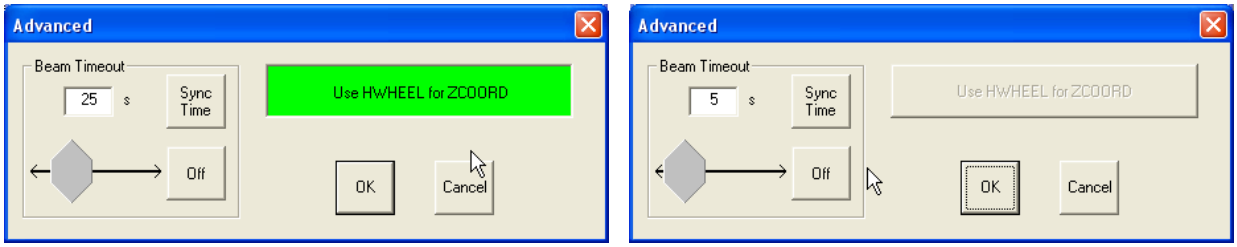

figure 6-11: Windows Vista/7 – Advanced dialog - Windows XP

BeamTimeout in seconds is used to eliminate defective infrared beams of Citron touchscreens. When a beam is interrupted longer than given number of seconds (which is normally interpreted as a valid touch point) beam is regarded as defective and not considered for touch point calculation any more. Rest of touchscreen area can be used again. Feature allows usage of partially defective touchscreens.

Default: 10 seconds
Range: 5 – 120 seconds

How to use:

1st way: Type in value in edit field and press **Sync Time** button. Touch useable slider below will jump to appropriate position automatically.

2nd way: Use touch slider below edit field when no keyboard is available. Value in edit field will be updated immediately:

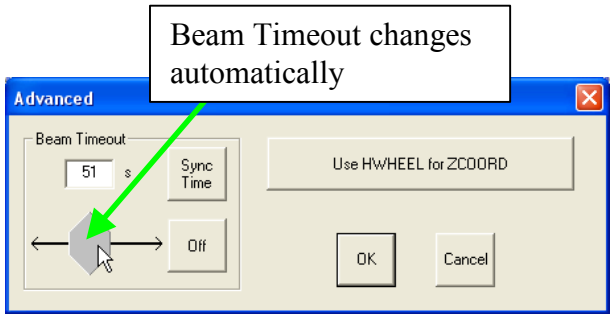

figure 6-12: Change Beam Timeout with touch slider

Set toggle button **Off** in toggled state (button color green) will switch off Beam Timeout feature. Defective beams will not be removed from touch point calculation regardless how long they are interrupted:

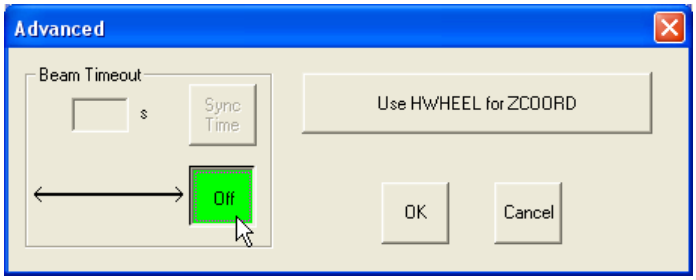

figure 6-13: Switch off Beam Timeout feature

Useful when long interruption sequences are part of operating philosophy. Beam Timeout feature switched on also prevents detection of touchscreens' defective beams.

Set **Use HWHEEL for ZCCORD** button in toggled state to send z coordinate of 3D touchscreens as HWHEEL mouse event instead of WHEEL mouse event (See 6.2.1 Click Mode):

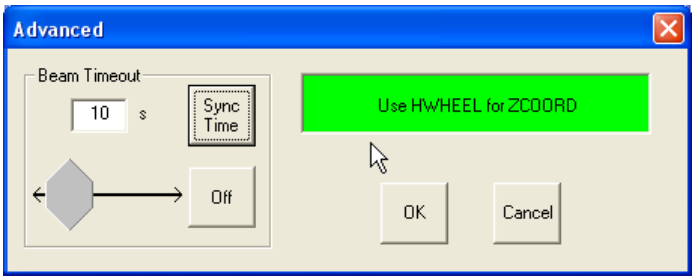

figure 6-14: Use of HWHEEL mouse event for z coordinate of ZCoord click mode

FEATURE IS NOT SUPPORTED AT THE MOMENT. BUTTON IS DISABLED.

6.3.3 Press Level

Citron Infrared Touchscreens can be equipped with a 3D unit allowing to detect how hard touch point is pressed. Ctw32 uses this feature, if available (See 6.3 Individual touchscreen options and settings), in two diffent ways.

1st way is described here. 2nd way in 6.2.1 Click Mode.

With **Press Level** dialog user can set pressure strength that is necessary to do a “mouse” click. Unintended clicks by accidental touch area interuption are no problem any more.

FEATURE ONLY MAKES SENSE WITH SOME CLICK MODES, SO IT IS ONLY DISPLAYED AND AVAILABLE WITH THOSE.

SETTING A PRESSURE LIMIT OF **0** DISABLES FEATURE.

Click **Press Level** button and open numerical touch keypad to enter value. Keyboard input is possible, too:

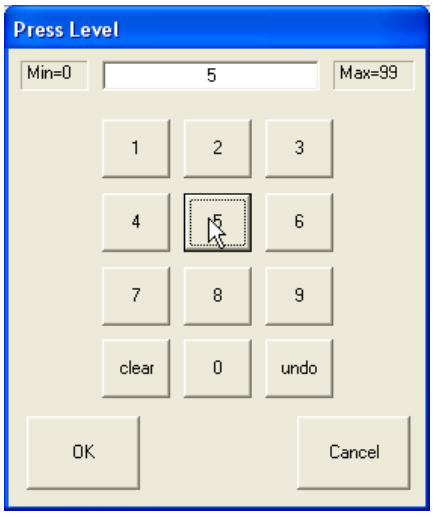

figure 6-15: Set Pressure Limit

Before running with new Press Level a confirmation dialog is displayed. Try to do a “click” on **Test** button to check, if pressure is in range for comfortable use:

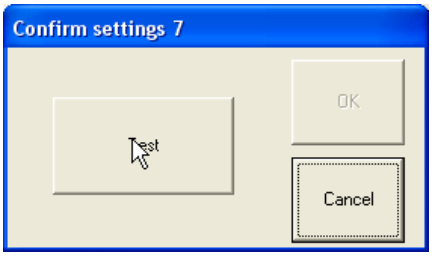

figure 6-16: Confirm set pressure level

There is no default value, because comfortable values greatly depend on how touchscreen is mounted, weight of touchscreen monitor, ankle and position of usage etc.

Suggested range:

“Light”: 3 – 5
“Medium”: 8 – 15
“Heavy”: > 20